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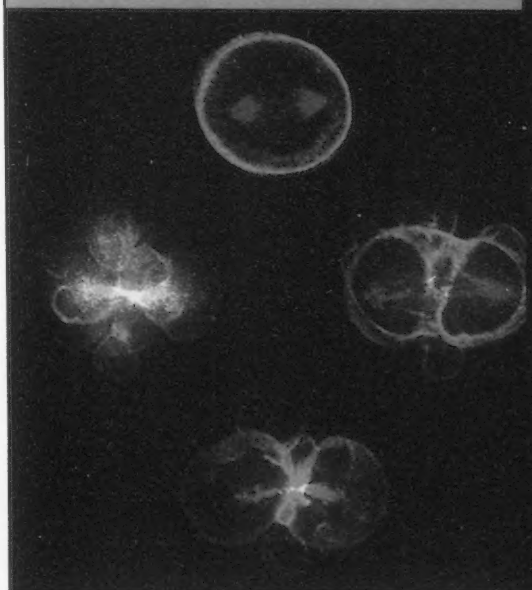

On the cover

A time-lapse series of a *Drosophila* S2 cell lacking the PI(4)P 5-kinase Skittles reveals excessive blebbing of the plasma membrane (green) during mitosis. The absence of Skittles reduces $PI(4,5)P_2$ levels, resulting in the mislocalization of the ERM protein Moesin and decreased cortical stability. The mitotic spindle is labeled by α-tubulin–mCherry (red). Image courtesy of Chantal Roubinet.
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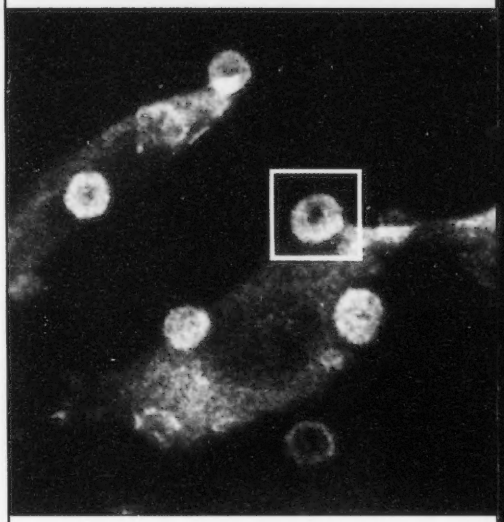

Podosomes are invasive membrane protrusions rich in actin (red). Pan et al. reveal that focal adhesion kinase (FAK, magenta) organizes podosomes into large rosettes in highly invasive cells, in part by suppressing Rho signaling. The Rho regulatory protein p190RhoGAP is labeled green.
Image © 2011 Pan et al.
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On the cover

Brill et al. develop techniques to label individual Schwann cells in vivo to investigate their organization and dynamics at neuromuscular junctions. Axonal (yellow) and terminal (magenta, cyan, and green) Schwann cells are arranged around a motor axon (grey). Synaptic vesicles are shown in red. Image courtesy of Monika Brill.
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277 Caspase-8 inactivation in T cells increases necroptosis and suppresses autoimmunity in *Bim*$^{-/-}$ mice
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323 A mitochondrial-focused genetic interaction map reveals a scaffold-like complex required for inner membrane organization in mitochondria
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341 Tracing the origins of centrioles, cilia, and flagella
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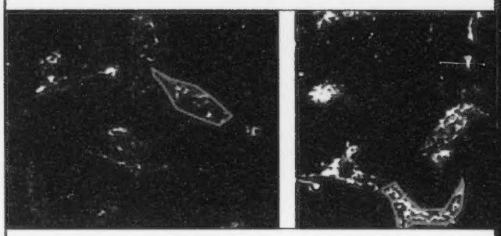

Chen et al. reveal that the anti-apoptotic protein Bcl-x_L increases the energetic efficiency of mitochondria by stabilizing their inner membrane potential. Compared to control cells (left), mitochondria in neurons lacking Bcl-x_L (right) have an increased mean membrane potential (shown on a pseudocolored scale, with white indicating regions of highest potential), though this fluctuates greatly over time.
Image © 2011 Chen et al.
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369 Canoe binds RanGTP to promote $Pins^{TPR}$/Mud-mediated spindle orientation
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377 CIIA functions as a molecular switch for the Rac1-specific GEF activity of SOS1
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435 Class III PI-3-kinase activates phospholipase D in an amino acid–sensing mTORC1 pathway
Mee-Sup Yoon, Guangwei Du, Jonathan M Backer, Michael A. Frohman, and Jie Chen

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On the cover

Wee et al. describe how the Ran GTPase and its effector protein Canoe orient the mitotic spindle by recruiting the dynein adaptor protein Mud to the cell cortex. The central cluster of cells shows a mitotic spindle (red) aligned toward a cortical patch of the apical protein Pins (green). The surrounding cell clusters show misoriented spindles in the absence of Canoe and Mud.
Images courtesy of Brett Wee.
See page 369.

449 Phosphorylation at serine 331 is required for Aurora B activation
Eleni Petsalaki, Tonia Akoumianaki, Elizabeth J. Black, David A.F. Gillespie, and George Zachos

467 Brr6 drives the *Schizosaccharomyces pombe* spindle pole body nuclear envelope insertion/extrusion cycle
Tiina Tamm, Agnes Grallert, Emily P.S. Grossman, Isabel Alvarez-Tabares, Frances E. Stevens, and Iain M. Hagan

485 Actin filament severing by cofilin is more important for assembly than constriction of the cytokinetic contractile ring
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499 The C terminus of talin links integrins to cell cycle progression
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515 Single-channel Ca^{2+} imaging implicates Aβ1–42 amyloid pores in Alzheimer's disease pathology
Angelo Demuro, Martin Smith, and Ian Parker

525 Clathrin phosphorylation is required for actin recruitment at sites of bacterial adhesion and internalization
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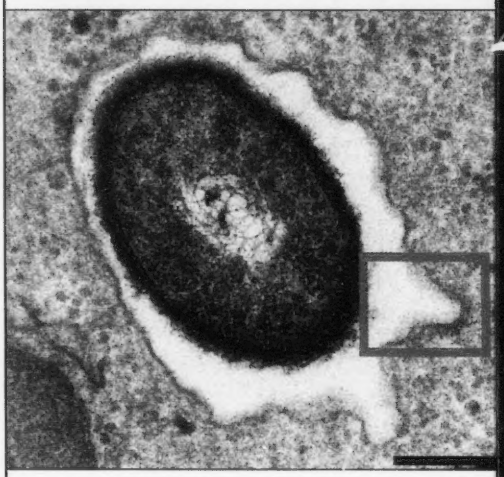

Bonazzi et al. report that clathrin phosphorylation recruits actin to sites of bacterial–host cell adhesion to drive pathogen internalization. The electron micrograph shows numerous clathrin-coated pits surrounding a *Listeria innocua* bacterium as it enters a host cell. Image © 2011 Bonazzi et al.
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- For Myo4p, two heads are better than one
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573 Point centromeres contain more than a single centromere-specific Cse4 (CENP-A) nucleosome
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583 Cdk1 phosphorylation of the kinetochore protein Nsk1 prevents error-prone chromosome segregation
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595 Sticky/Citron kinase maintains proper RhoA localization at the cleavage site during cytokinesis
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605 An intramolecular salt bridge drives the soluble domain of GTP-bound atlastin into the postfusion conformation
Jeanne Morin-Leisk, Simran G. Saini, Xin Meng, Alexander M. Makhov, Peijun Zhang, and Tina H. Lee

617 Hsp42 is required for sequestration of protein aggregates into deposition sites in *Saccharomyces cerevisiae*
Sebastian Specht, Stephanie B.M. Miller, Axel Mogk, and Bernd Bukau

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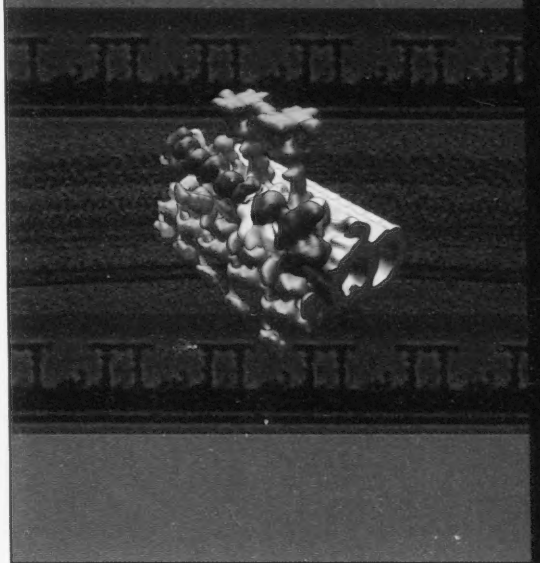

On the cover

Pigino et al. use cryoelectron tomography to obtain the three-dimensional structure of radial spokes (red), regulatory complexes that project from the outer microtubule doublets (grey) of cilia and flagella. Also shown in this reconstruction of a *Chlamydomonas* flagellum are the outer and inner dynein arms (light and dark blue), the dynein light and intermediate chains (yellow), and the dynein regulatory complex (green). Image courtesy of Pigino et al.
See page 673.

631 Two single-headed myosin V motors bound to a tetrameric adapter protein form a processive complex
Elena B. Krementsova, Alex R. Hodges, Carol S. Bookwalter, Thomas E. Sladewski, Mirko Travaglia, H. Lee Sweeney, and Kathleen M. Trybus

643 Tim50's presequence receptor domain is essential for signal driven transport across the TIM23 complex
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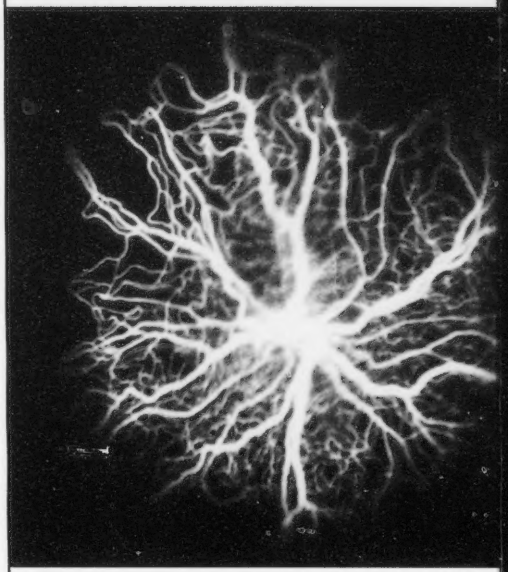
657 Existence of a novel clathrin-independent endocytic pathway in yeast that depends on Rho1 and formin
Derek C. Prosser, Theodore G. Drivas, Lymarie Maldonado-Báez, and Beverly Wendland

673 Cryoelectron tomography of radial spokes in cilia and flagella
Gaia Pigino, Khanh Huy Bui, Aditi Maheshwari, Pietro Lupetti, Dennis Diener, and Takashi Ishikawa

689 Astrocyte pVHL and HIF-α isoforms are required for embryonic-to-adult vascular transition in the eye
Toshihide Kurihara, Peter D. Westenskow, Tim U. Krohne, Edith Aguilar, Randall S. Johnson, and Martin Friedlander



Kurihara et al. describe how the expression of von Hippel-Lindau protein (pVHL) in astrocytes regulates vascular remodeling in the newborn eye. The image shows a massive re-growth of embryonic blood vessels in the eye of a forty-day old mouse whose astrocytes lack pVHL.
Image © 2011 Kurihara et al.
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Kimihide Hayakawa, Hitoshi Tatsumi, and Masahiro Sokabe

729 Snail1 controls epithelial–mesenchymal lineage commitment in focal adhesion kinase–null embryonic cells
Xiao-Yan Li, Xiaoming Zhou, R. Grant Rowe, Yuexian Hu, David D. Schlaepfer, Dusko Ilić, Gregory Dressler, Ann Park, Jun-Lin Guan, and Stephen J. Weiss

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739 Mus81-mediated DNA cleavage resolves replication forks stalled by topoisomerase I–DNA complexes
Marie Regairaz, Yong-Wei Zhang, Haiqing Fu, Keli K. Agama, Nalini Tata, Surbhi Agrawal, Mirit I. Aladjem, and Yves Pommier

751 Identification of host cell factors required for intoxication through use of modified cholera toxin
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765 VPS35 haploinsufficiency increases Alzheimer's disease neuropathology
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781 Casein kinase I delta controls centrosome positioning during T cell activation
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799 Myosin concentration underlies cell size–dependent scalability of actomyosin ring constriction
Meredith E.K. Calvert, Graham D. Wright, Fong Yew Leong, Keng-Hwee Chiam, Yinxiao Chen, Gregory Jedd, and Mohan K. Balasubramanian

815 SEPT9 occupies the terminal positions in septin octamers and mediates polymerization-dependent functions in abscission
Moshe S. Kim, Carol D. Froese, Mathew P. Estey, and William S. Trimble

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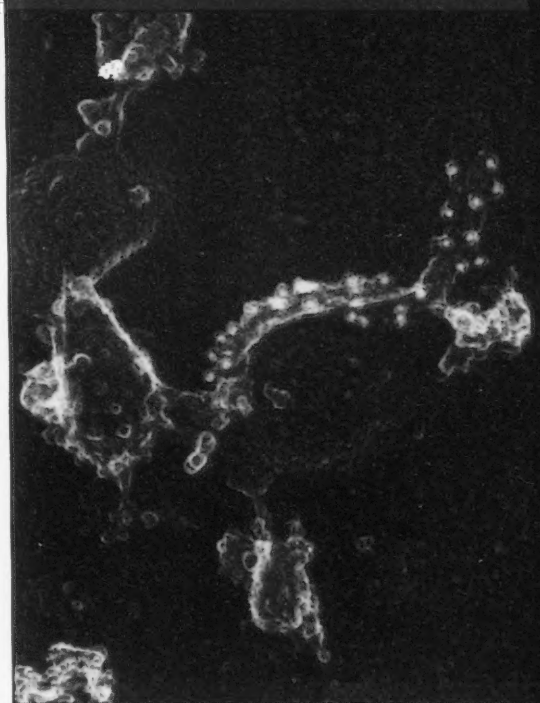

On the cover

An electron micrograph of the cytoplasmic face of a budding yeast's plasma membrane shows a filamentous structure formed by eisosome proteins (immunolabeled with gold particles) next to a membrane invagination. Karotki et al. reveal that eisosome components spatially organize the plasma membrane by assembling into a lipid-binding scaffold.
Image courtesy of Lena Karotki.
See page 889.

827 Crumbs regulates rhodopsin transport by interacting with and stabilizing myosin V
Shirin Meher Pocha, Anna Shevchenko, and Elisabeth Knust

839 Release of serine/threonine-phosphorylated adaptors from signaling microclusters down-regulates T cell activation
Rémi Lasserre, Céline Cuche, Ronnie Blecher-Gonen, Evgeny Libman, Elise Biquand, Anne Danckaert, Deborah Yablonski, Andrés Alcover, and Vincenzo Di Bartolo

855 Ajuba is required for Rac activation and maintenance of E-cadherin adhesion
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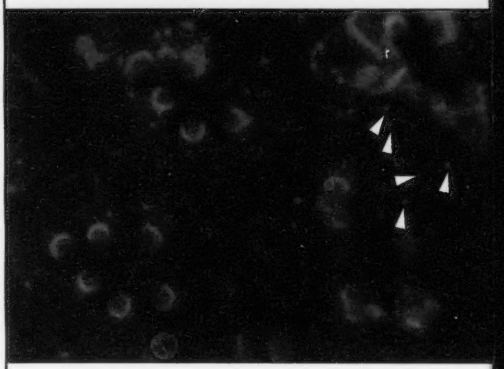
873 E–N-cadherin heterodimers define novel adherens junctions connecting endoderm-derived cells
Beate K. Straub, Steffen Rickelt, Ralf Zimbelmann, Christine Grund, Caecilia Kuhn, Marcus Iken, Michael Ott, Peter Schirmacher, and Werner W. Franke

889 Eisosome proteins assemble into a membrane scaffold
Lena Karotki, Juha T. Huiskonen, Christopher J. Stefan, Natasza E. Ziółkowska, Robyn Roth, Michal A. Surma, Nevan J. Krogan, Scott D. Emr, John Heuser, Kay Grünewald, and Tobias C. Walther

903 Cortactin phosphorylation regulates cell invasion through a pH-dependent pathway
Marco A. O. Magalhaes, Daniel R. Larson, Christopher C. Mader, Jose Javier Bravo-Cordero, Hava Gil-Henn, Matthew Oser, Xiaoming Chen, Anthony J. Koleske, and John Condeelis



Pocha et al. describe how the apical determinant Crumbs (blue) stabilizes myosinV in order to regulate the transport of rhodopsin 1 (red) into the light-sensing rhabdomeres (green) of the *Drosophila* eye. In the absence of Crumbs, myosinV levels decrease and rhodopsin 1 accumulates in the photoreceptor cell body (arrowheads), triggering retinal degeneration.
Image © 2011 Pocha et al.
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922 • Lipid droplets fatten up with Fsp27
• CUPS provide a handle on Acb1 secretion
• Cell death helps give closure
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923 • Shs1 rounds out the septin repertoire
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927 Lipid traffic: Osh4p makes an unexpected exchange
Tim P. Levine

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931 Cell death and infection: A double-edged sword for host and pathogen survival
Hiroshi Ashida, Hitomi Mimuro, Michinaga Ogawa, Tara Kobayashi, Takamitsu Sanada, Minsoo Kim, and Chihiro Sasakawa

943 Subversion of membrane transport pathways by vacuolar pathogens
Eric Alix, Shaeri Mukherjee, and Craig R. Roy

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953 Fsp27 promotes lipid droplet growth by lipid exchange and transfer at lipid droplet contact sites
Jing Li, Gong Zhiqi Sun, Jiaren Mu, Meng Xu, Nicole Schieber, Dan Yu, Guangrou Shui, Hongyuan Yang, Robert G. Parton, and Pengyu

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965 Osh4p exchanges sterols for phosphatidylinositol 4-phosphate between lipid bilayers
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979 Biogenesis of a novel compartment for autophagosome-mediated unconventional protein secretion
Caroline Bruns, J. Michael McCaffery, Amy J. Curwin, Jean M. Duran, and Vivek Malhotra

993 Subunit-dependent modulation of septin assembly: Budding yeast septin Shs1 promotes ring and gauze formation
Galo Garcia III, Aurelie Bertin, Zhu Li, Yi Song, Michael A. McMurray, Jeremy Thorner, and Eva Nogales

1005 Synergy between the ESCRT-III complex and Deltex defines a ligand-independent Notch signal
Kazuya Hori, Anindya Sen, Tom Kirchhausen, and Spyros Artavanis-Tsakonas

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On the cover

Gong et al. reveal that the adipocyte protein Fsp27 (green) concentrates at the sites of contact between lipid droplets (red), where it promotes the growth of these fat-storing organelles by facilitating lipid transfer.
Image courtesy of Zhiqi Sun.
See page 953.

1017 Distinct intracellular motifs of Delta mediate its ubiquitylation and activation by Mindbomb1 and Neuralized
Aikaterini Daskalaki, Nevine A. Shalaby, Kristina Kux, Giorgos Tsoumpekos, George D. Tsibidis, Marc A.T. Muskavitch, and Christos Delidakis

1033 Eph receptor function is modulated by heterooligomerization of A and B type Eph receptors
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1047 Live imaging of apoptosis in a novel transgenic mouse highlights its role in neural tube closure
Yoshifumi Yamaguchi, Naomi Shinotsuka, Keiko Nonomura, Kiwamu Takemoto, Keisuke Kuida, Hiroki Yosida, and Masayuki Miura

Corrections

1061 Efficient termination of vacuolar Rab GTPase signaling requires coordinated action by a GAP and a protein kinase
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1063 Mice lacking JunB are osteopenic due to cell-autonomous osteoblast and osteoclast defects
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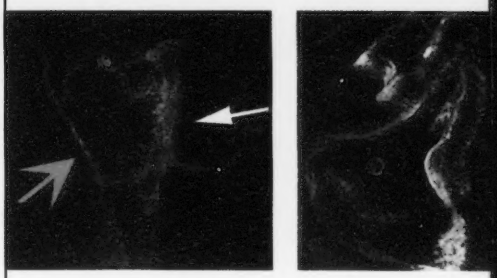

Daskalaki et al. reveal that ubiquitylation of the intracellular domain of the Notch ligand Delta is required for Notch activation. Ectopic expression of wild-type Delta (green, left) in *Drosophila* larval wing epithelia induces a stripe (white arrow) of *wg* (red), a Notch target gene. But a Delta mutant (green, right) unable to bind the E3 ubiquitin ligase Mindbomb1 fails to induce *wg* expression.
Image © 2011 Daskalaki et al.
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A 3D-rendered time-lapse series shows the disassembly of the mitotic spindle (orange) after inactivation of the cyclin-dependent kinase Cdk1. Hégarat et al. reveal that spindle microtubules are stabilized in the absence of Aurora A and Aurora B activity, indicating that these two mitotic kinases regulate anaphase microtubule dynamics. Image courtesy of Nadia Hégarat and Helfrid Hochegger.

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1171 Neuregulin/ErbB regulate neuromuscular junction development by phosphorylation of α-dystrobrevin
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1205 Impenetrable barriers or entry portals? The role of cell–cell adhesion during infection
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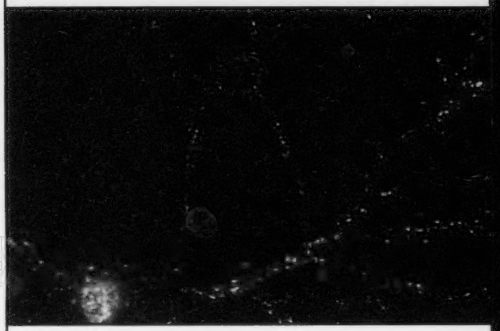

Baez et al. identify S-foci, neuronal cytoplasmic granules containing the translational repressor Smaug1 (red), which control synapse formation by regulating the local translation of mRNAs encoding the kinase CaMKIIα (green) and other proteins after NMDA receptor stimulation.
Image © 2011 Baez et al.
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